

**ABSTRACT OF THE DISCLOSURE**

A solid state compact ion gauge includes an inlet, a gas ionizer, and a detector all formed within a cavity in a semiconductor substrate. The gas ionizer can be a solid state electron emitter with ion optics provided by electrodes formed in the cavity through which the cavity is evacuated by differential pumping. Preferably, the substrate is formed in two halves. The substrate halves are then bonded together after the components are provided therein.